

Amendments to the Specification:

Please replace the paragraph at page 2, lines 10-16 with the following amended paragraph:

Conventional backup devices usually employ a monolithic backup and retrieval system servicing a single server with attached storage devices. These systems usually control all aspects of [[a]] data backup or retrieval, including timing the backup, directing the files to be backed up, directing the mode of the archival request, and directing the storage process itself through an attached storage device or devices. Further, these backup and retrieval systems are not scalable and often direct only one type of backup and retrieval system, whether it is a network backup or a single machine backup.

Please replace the paragraph at page 4, lines 12-21 with the following amended paragraph:

The first, second, and third components may reside on a single computing device, may be split among several computing devices, and may reside in any combination on a single computing device. Exemplary embodiments of the backup system may take the form where the first software agent and the second software agent operate on the same computing device, where the first and third software agents operate on the same computing device, where the first, second, or third software agents operate on the same computing device, where the second and third agents operate on the same computing device, where the three software agents all operate on different computing devices, or any combination involving the three software agents operating or not operating on common computing devices.

Please replace the paragraph at page 9, lines 8-13 with the following amended paragraph:

The network devices 110, 120, 130, and 150 contain media modules 116, 126, 136, ~~and~~ respectively. The media modules communicate with the manager module 115, and coordinate backups to the respective library media. Each media module is responsible for the archival functions of a logical library media. As such, the particular

media module would coordinate the actions of the storage device which it is responsible for with the manager module.

Please replace the paragraph at page 9, line 21-page 10, line 2 with the following amended paragraph:

It should be noted that the manager module 115 could direct the backup of the network devices 120, 130, 140, or 150 through contacting ~~the~~ and directing the client modules 127, 137, 147, or 157. The files and/or data units to be backed up from any of the network devices 120, 130, 140, or 150 may be directed to any of the backup devices 112, 122, or 132 through the use of the media modules 116, 126, or 136.

Please replace the paragraph at page 10, lines 3-14 with the following amended paragraph:

During the backup process, the media module responsible for the physical backing up of the file and/or data unit could then index the data as the information is being archived. This allows quick retrieval of any portion of data. Portions of the index data are then communicated to the manager module 115 to enable the manager module to quickly and easily locate and determine the status of backed up files and/or data units for management purposes. The management module receives aggregate information concerning data bundles, tape offsets and physical volumes where the data is stored on the backed up files and/or data units. Thus, most of the information in the index regarding the backed up files and/or data units is kept local to the specific media manager that is responsible for the backup of the particular file and/or data unit. This saves network and communication overhead, and localizes and decentralizes the internals of the indices to the locus of storage.

Please replace the paragraph at page 10, lines 15-20 with the following amended paragraph:

As such, this alleviates bottlenecks at the manager module 115 when large numbers of clients are browsing or restoring data. By distributing the indexing data around the network at the specific media modules, the manager module 115 acts like a

directory service identifying which media module a specific client request should be serviced by. Thus, the load to provide browse/restore information is spread across many media modules.

Please replace the paragraph at page 11, lines 19-21 with the following amended paragraph:

It should be understood that the modules indicated in Fig. 1 may be subdivided into further functional units. Thus, the single manager module, media module, and client module may actually comprise several inter[[e]]connected functional modules.

Please replace the paragraph at page 12, lines 15-20 with the following amended paragraph:

The library sub-agent 202 is responsible for controlling the physical library media. Typically, the library sub-agent 202 presents a single interface to the rest of the backup system. Layered underneath the library sub component are device drivers for controlling any particular library medium, or the interface to a jukebox control system. As such, a library medium may be interchanged seamlessly ~~to~~ with the rest of the backup system, including other sub-agents associated with the media manipulation.

Please replace the paragraph at page 13, lines 3-7 with the following amended paragraph:

The application sub-agent 210 stores configuration parameters and current states for each application. The application sub-agent 210 could store the backup preference time information for all pertinent backup levels. The application sub-agent 210 could also be adaptive in nature. For example, the application sub-agent could determine new start times based on a last successful backup at each level.

Please replace the paragraph at page 13, line 17-page 14, line 2 with the following amended paragraph:

The media sub-agent 218 keeps track of all sets of related media, and indirectly controls the library media via a library sub-agent associated with a media module. The media sub-agent 218 and the job sub-agent 214 act together to track of library media utilization. The media sub-agent 218 knows how many drives are in use or available through each media module. Since the job sub-agent 214 knows which jobs are using which drives available through a particular media module, the media sub-agent 218 and the job sub-agent 214 can coordinate to keep track of all the jobs and all the media used by those jobs.

Please replace the paragraph at page 14, lines 17-19 with the following amended paragraph:

It should be noted that the sub-agents could exist as integrated modules in another agent, or operate in an independent manner. However, the sub-agents or modules existing under an[[d]] agent provide functionality in a modular fashion in either case.

Please replace the paragraph at page 17, lines 8-18 with the following amended paragraph:

A file 710 is archived on the storage device 750. A separate file spans the storage devices as a file portion 720 and a file portion 730 in the storage devices 760 and 770. A copy of the file 710, 710a, is maintained separately in the storage device 780. Additionally, the archived files may be stored on a differential block basis. For example, the file 740 is stored on the library media device 780. However, at a later time, an incremental backup has determined that the file 740 has been altered, but only in one sector. The backup and retrieval system could operate in a fashion such that the backup of the altered version of the file 740 comprises only those sections of the file that have changed. Thus, the blocks 740a and 740b represent the portions of the file 740 that have changed. The file 740, when overlaid with the blocks 740a and 740b, stands for the current altered version of the file 740.

Please replace the paragraph at page 18, lines 1-15 with the following amended paragraph:

The management component 810 may also maintain the archives through various policies. The policies may include drive-cleaning policies, index pruning policies, aging policies, and library media volume maintenance. For example, the management component 810 may implement a policy that initially archives files and/or data on a relatively fast media. Upon another archival cycle, the management component 810 may relocate the first set of archived files and/or data to another slower type media, due to the presence of another set of a newly archived data and/or files. Alternatively, for example, older differential or incremental backups maybe completely deleted from an archive upon the completion and verification of a newer full backup. One skilled in the art should recognize that since the management component 810 is a software agent, these policies might be fully programmable and automatically adaptable to changing conditions in the computing devices serviced by the backup and retrieval system, as well as traffic on a network or networks linking them. The management component 810 may contain the ability to implement one or more of these policies in a fully adaptable archival management scheme.

Please replace the paragraph at page 25, line 17-page 26, line 4 with the following amended paragraph:

The management component 810 tracks the archival process through the metadata passed back from the particular media components 830. Thus, for any given archived file and/or data, the management component ~~when~~ 810 can precisely track where the information is archived, even when portions of the archived data span several library media. Given the information as passed from the particular media components 830 to the management component 810 regarding the archived files and/or data, the management component 810 can track all versions of the archived information, including all full backups, all differential backups, sector based backups of large data fields or files, and all portions of the archived file and/or data that may reside across several media, as well as operating system information on the data and/or files as well as other information deemed important by an administrator.

Please replace the paragraph at page 26, line 22-page 27, line 7 with the following amended paragraph:

In another embodiment, the management component 810 also relays to the particular media components 830 information on the requested file and/or data, or portions of the requested file and/or data. In addition, the management component 810 makes available to the particular media components 830 the location of the requesting client component 820. Thus, when the particular media components 830 retrieve the information, the particular media components 830 may forward the retrieved information to the requesting client component 820 directly. The requesting client component 820 then assembles the retrieved information for presentment to the particular computing device for which it is responsible.

Please replace the paragraph at page 27, lines 8-10 with the following amended paragraph:

The use of the particular components is not restricted to any particular machine. The components may reside on the same computing devices, on different computing devices, or may be combined in any different combination ~~on~~of computing devices.